

Expeditionary Basing & Collective Protection JOCOTAS Briefing

Director

19 November 2015



Vision:

We aspire to be the premier technology/capability developer in the world for Expeditionary Basing & Collective Protection and DoD's supplier of choice for rapid prototyping, fabrication and engineering services.

Mission:

We provide State of the Art technology, developmental services, global engineering support and world class rapid prototyping and fabrication services to an expanding DoD customer base.

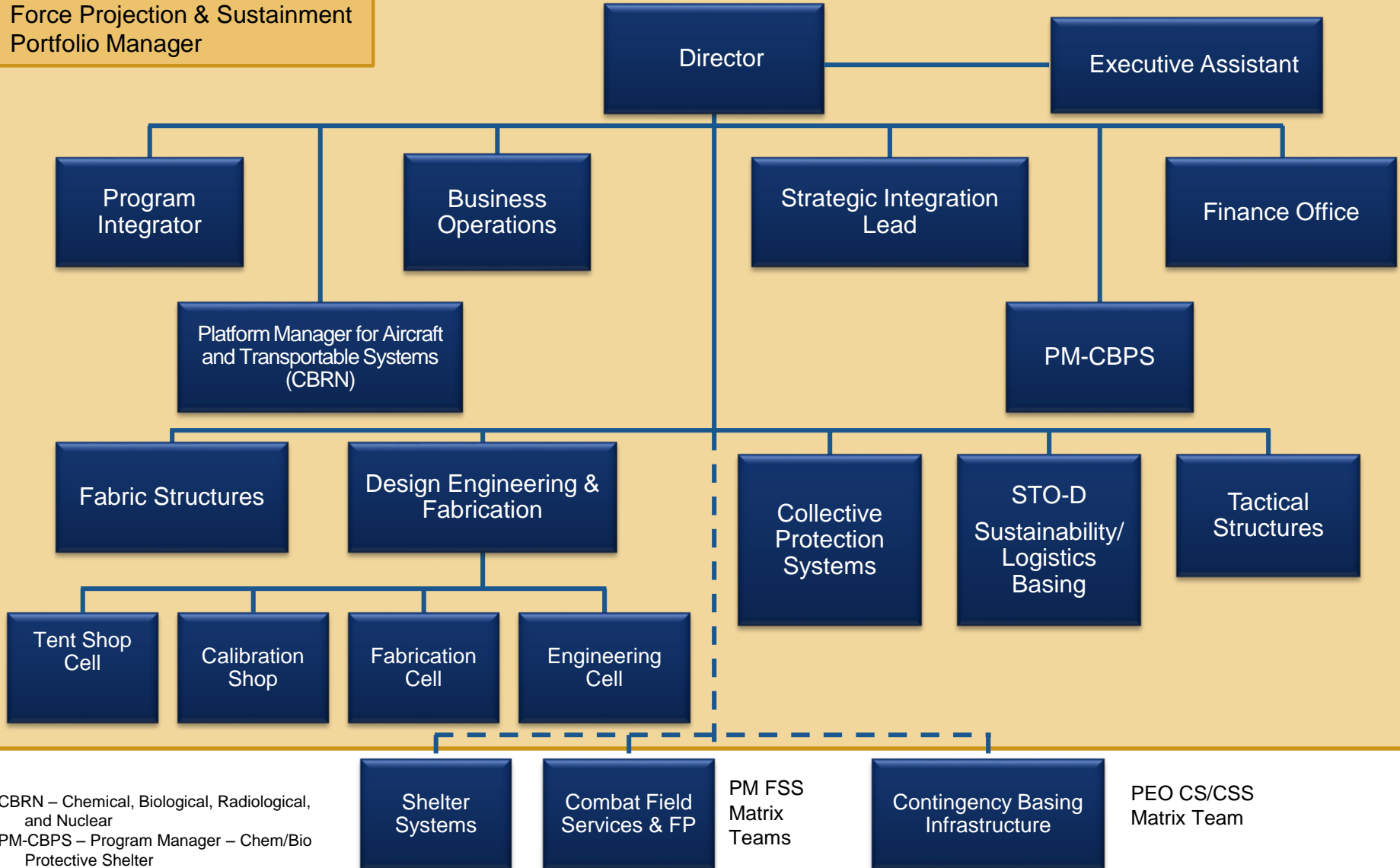
Natick Core Values:

Integrity, Warfighter & Customer Focus,
Excellence, and Teamwork



Expeditionary Basing & Collective Protection Organization

Force Projection & Sustainment
Portfolio Manager



CBRN – Chemical, Biological, Radiological, and Nuclear
 PM-CBPS – Program Manager – Chem/Bio Protective Shelter
 FP – Force Provider

PM FSS
Matrix
Teams

PEO CS/CSS
Matrix Team



Expeditionary Basing & Collective Protection



Basing/Shelter Science & Technology Shelter Integration & Product Support

- Discover, develop and mature technologies for Expeditionary Basing systems providing improved habitability, increased protection, and reduced logistics burden
- Develop cutting edge technologies leading to advances in Contingency Basing
- Design, engineer, and integrate rigid wall shelter systems for unique customer applications
- Provide Life Cycle Engineering Support to PD-FSS, PEO CS/CSS, JPM Protection, JPEO CBD, TACOM-ILSC

Science & Technology Objective - Demonstration Sustainability & Logistics-Basing

- Heating/Cooling Power Reduction
- Power Sourcing Efficiency
- Water Use Reduction
- Waste Management Optimization
- Waste Disposal Efficiency
- Energy Conversion
- Quality of Life Studies

Design Engineering & Fabrication Capabilities

- Engineering Services
- Strength Testing
- Mechanical Prototype & Fabrication
- Tent & Fabric Prototyping

Collective Protection & JPM Protection Support

- Product Management
- Systems Engineering support
- CB Fabric and Airlock Design
- Product Sustainment Engineering
- ChemBio Systems Integration
- Rapid Prototyping (fabric & metal)
- Physical Properties Lab testing



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Expeditionary Basing



We provide **systemic** solutions and innovative technologies for **protective enclaves** in **hostile environments**.

All operations from **Small Combat Units** to **Battalion** emanate from **integrated, energy efficient Expeditionary Base Camp** force projection platforms.

We provide shelter systems and expeditionary base camp capabilities for Soldiers in all **types of environments**, through the in-house and commercial development of **concepts and technologies**.



Expeditionary Basing



Leading Expeditionary Basing Science & Technology

- Lead for the Sustainability Logistics Basing Science & Technology Objective – Demonstration (SLB-STO-D)
- Advanced Energy Efficient Shelters Joint Service Lead
 - Office of the Secretary of Defense for Operational Energy Plans & Programs
- Joint Deployable Waste-to-Energy Technical Manager
- Lead for RDECOM Leadership Initiative Self-Sufficient Capabilities for Basing Operations, Community of Practice
- Technical POC for Revolutionary Fibers & Textiles Institute for Manufacturing Innovation

Expeditionary Basing

Shelters



- Advanced fabric structures
- Rigid walled shelters
- Material development
- Insulation & thermal coatings

Equipment



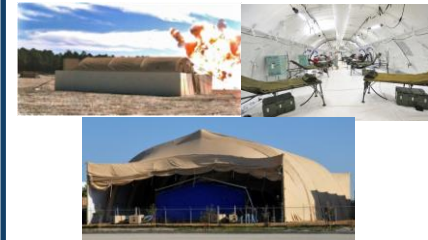
- ECU and heating
- LED lighting
- Water and waste demand reduction
- Personal hygiene

Operational Energy



- Nanogrid phase balancing
- Alternative power generation (PV, solar, wind)
- Waste to energy

Protection



- Integrated tactical protection
- Blast/ballistic
- Chemical/Biological
- EMI hardening
- Antimicrobial coatings

Integrating Operational Quality of Life in all capability areas



Expeditionary Basing



Current Conditions

- Ad hoc
- Inefficient
- High resource consumption
- Limited capabilities
- Austere/Lower quality of life

Leveraging Technology

- Rapidly deployable structures
- High thermal efficiencies
- Advanced, low energy HVAC
- Renewable Energy
- Energy Management & Control
- Waste Management
- Waterless Technologies
- Trade off analysis –component technology capability vs. system level performance

Future State of the Art

- Basing systems break down into man-portable parts, eliminating need for MHE
- HMMWV/JLTV towable
- Self-sustaining capabilities
- Habitation systems optimized for efficiencies, reduced manpower requirements, and minimized logistics burden
- Enhanced quality of life
- Ruggedized and highly mobile basing systems to support the Squad and Small Unit



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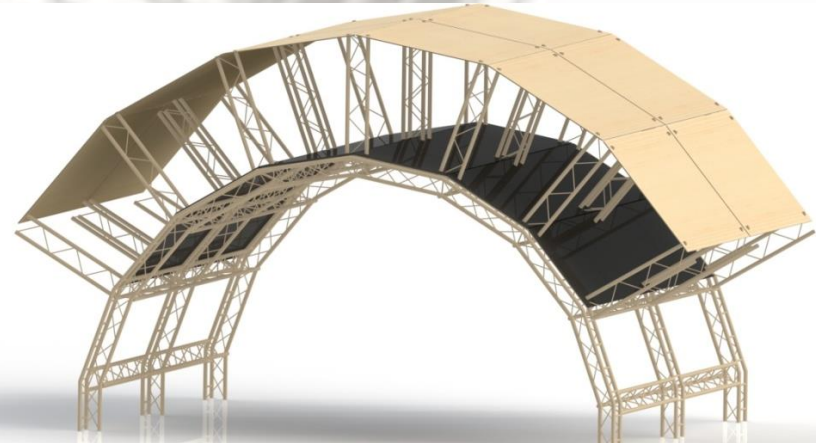
Project Highlights



- Shelter-Integrated Ballistics
- Chemical Biological Defense – Chemical Biological Protective Shelter (CBPS), Joint Strike Fighter (JSF) Decontamination System, and Joint Biological Agent Decontamination System (JBADS)
- Rigid Wall Shelters
- Advanced Energy Efficient Shelter Systems
- Operational Quality of Life

Overhead Threat Protection (OTP)

- 18-21 May, Live Fire Testing completed on prototype at URI.
- 21 July, Participated in a collaborate meeting with ARL Survivability Lethality Directorate for Threat Characterization and OTP.
- 22-23 July, Participated in the Joint Trauma Analysis and Prevention of Injuries in Combat (JTAPIC).



Chemical Biological Protective Shelter (CBPS) M8E1

- Funding received from NGREA for procurement of 22 additional systems.
- Raised the total procurement totals to 253 CBPS-M8E1 Units under existing contract.
- Organic production capability being developed at Pine Bluff Arsenal to start producing in FY16.
- Total to be produced 163 CBPS-M8E1 at Pine Bluff Arsenal.





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Chemical Biological Defense



Joint Strike Fighter Decontamination System

- Nov 2014, System Integration Demonstration completed.
- Live Fire Test & Evaluation scheduled in FY16.

Joint Biological Agent Decontamination System (JBADS)

- Officially became a Program of Record.
- Jan 2015, Joint Capability Technology Demonstration (JCTD) was completed.
- The objective was to demonstrate a capability for biological decontamination of the interior and exterior of a C-130 aircraft using hot, humid air.

Composite Shelters

- Successfully manufactured 20' composite panels to include:
 - Fixed Floor, Fixed Roof, Folding Sidewalls, Folding Endwalls, Large Blank Closeout Panel, and Large ECU Closeout Panel.
- Successfully manufactured 10' composite Folding Endwall panels
- Composite Corner Post to undergo testing beginning of FY16.
- Expected completion of USAMMDA 20' Expandable ISO Shelter 3rd quarter FY16.
- Air Force is expected to provide Integumet® "wall paper" to program to save the cost of painting shelter.
- Interest from industry in investing to mature composite manufacturing technology for commercial applications.



Improved Fire Safety in Expeditionary Shelters



- Integrated Research Team led by EB&CPD includes members from Fabric Structures Team, Tactical Shelters Team, Ouellette Thermal Test Facility, PdM-FSS.
- Address flammability in soft- and rigid-wall shelters by developing test methods that accurately correlate with battlefield burn performance.
- Investigating fire standards, material interactions, scaling factors, and realistic burn scenarios.
- Textile consultation and testing in partnership with WPI.
- Composite project is investigating fire resistance via industrial sources.



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Advanced Energy Efficient Shelter Systems Holloman AFB



- New 42K ECU contributes a 70% power savings over current energy efficient fielded shelters.
- V1.5 double radiant liner contributes a 14% power savings over the current insulated liner.
- New prototype solar shade contributes a 9% power savings over current solar shades.
- **V1.5 system with solar shade demonstrated 83% power savings over current energy efficient shelter system and 89% power savings over legacy systems.**



Soldier Operational Quality of Life (QoL)



Purpose

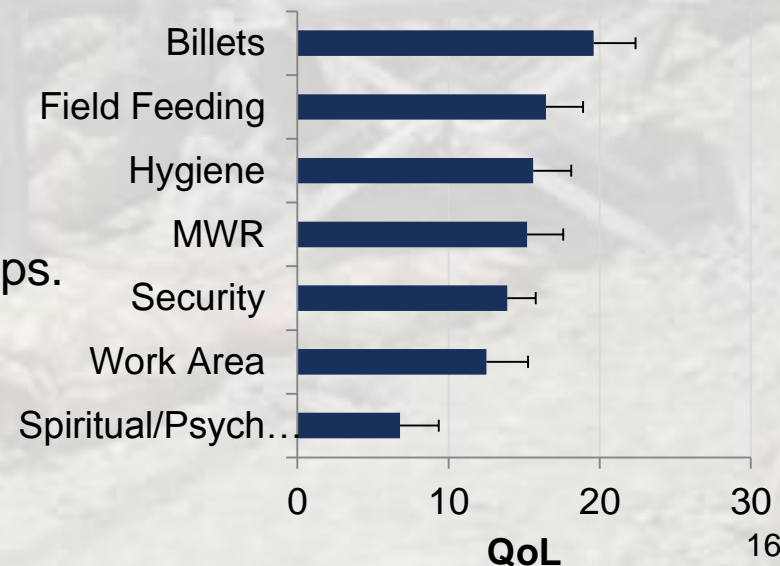
- Develop a quantitative framework to measure, baseline and model base camp quality of life (QoL) as an enabler of Soldier readiness.

Products

- Detailed specification of camp attributes and service levels that impact QoL based on priorities identified by Soldiers.
- Survey to measure impact of camp attributes on QoL.
- Model for predicting QoL.

Payoff

- Captures the “voice of the Soldier” by identifying how they prioritize QoL related base camp services.
- Establishes a capability to measure and model Soldier QoL on contingency base camps.
- This project gives TRADOC and the base camp community data and tools to make decisions about Soldier QoL.





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Soldier Interviews



“In general, the more the Army spends to try to help a Soldier and make it less painful for him, the better the Soldier performs. He is more mentally ready, physically, and emotionally...”



“When you are mentally draining them because the facilities suck, they can’t go anywhere, the base is really not safe even if it is the base, all of that stuff mentally draining them, they may not be able to react as fast or see something out of the ordinary or catch it as quick”





Soldier Interviews



“When you’re on patrol you have to think about stuff 24/7...you’re being mentally drained and when you come in [to the camp] you want the Soldier to be able to decompress...”



Questions?

